

ABSTRACT OF THE DISCLOSURE

The present invention relates to an electrical power and cooling system for use in an aircraft having at least one engine. The electrical power and cooling system comprises a single shaft, a power turbine mounted on the shaft for receiving fresh pressurized air from the at least one engine, a cooling turbine mounted on the shaft and receiving the fresh pressurized air from the at least one engine, a generator mounted on the shaft, and a fan mounted on the shaft for creating a flow of cooling air. The system further has a condenser for removing moisture from the air exiting the cooling turbine and a mixing chamber for mixing the cooled dry air with recirculated cabin air. The electrical power and cooling system delivers conditioned air to a cabin and/or a flight deck onboard the aircraft and electrical power to the aircraft's electrical systems.